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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/639,259	08/15/2000	Helen H. Kim	Kim 6-8	1586
22186	7590	08/11/2004	EXAMINER	
MENDELSON AND ASSOCIATES PC			AHN, SAM K	
1515 MARKET STREET			ART UNIT	
SUITE 715			PAPER NUMBER	
PHILADELPHIA, PA 19102			2637	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/639,259

Applicant(s)

KIM ET AL.

Examiner

Sam K. Ahn

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendment, received on 5/26/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 and 22 is/are allowed.
- 6) ☒ Claim(s) 1-2,4 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 3,5-12 and 16-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see p.5-7, filed on 5/26/04, with respect to the rejection(s) of claim(s) 1-2,4 and 14-15 under 102(b) and the rejection of claim 13 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2,4 and 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Barton (US Pat No. 6,654,431 B1, Barton et al.).

Regarding claims 1 and 14, Barton discloses a receiver and a method for processing a received signal (note col.14, lines 1-14) having two or more data levels, the received signal having been transmitted over a transmission channel (see Fig.10), the receiver comprising, two or more channel estimators (435, 436), at least one channel estimator for each different data level for the received signal, each channel estimator being configured to model the transmission

channel to generate an estimated signal (437, 438) corresponding to one of the data levels, and a comparator (450) configured to receive the received signal (outputs of 440) and the estimated signal (437,438) from each channel estimator and select an output data level for the received signal. (note col.14, line 1 – col.15, line 15)

Regarding claims 2,4 and 15, Barton teaches all subject matter claimed, as applied to claims 1 and 14. Barton further teaches wherein each channel estimator (435,436 in Fig.10, and see Fig.12) implements a 2<sup>nd</sup> order or higher model of the transmission channel. (note col.17, lines 49-51)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barton (US Pat No. 6,654,431 B1, Barton et al.) in view of Gerlach (US Pat. No. 6,725,411 B1, Gerlach et al.).

Regarding claim 13, Barton teaches all subject matter claimed, as applied to claim 1. Barton teaches transmission channel as a wireless channel and the receiver comprising two or more channel estimators and the comparator. And

although Barton does not explicitly teach wherein the channel estimators and the comparator are implemented in a single integrated circuit as analog circuitry, it would have been obvious to one skilled in the art at the time of the invention to implement as such for the purpose of saving space in the receiver.

However, Barton does not explicitly teach wherein the receiver may be coupled to an optical transmission channel. Gerlach teaches a receiver comprising channel estimators (906 in Fig.9) wherein the transmission channel (108 in Fig.1) may be an optical transmission channel. (note col.3, lines 10-16) Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement Barton's teaching of the receiver not in a wireless environment, but also having the receiver coupled to the optical transmission channel for the purpose of taking advantage of Barton's receiver in an optical environment.

***Allowable Subject Matter***

4. Claims 21 and 22 are allowed.
5. Claims 3,5-12 and 16-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter:  
Present application discloses an apparatus and a method in a receiver comprising two channel estimators coupled to an adaptive equalizer wherein the input signal having two or more data levels is subtracted by an estimated signal to determine the

received signal. Each channel estimators are coupled to a comparator to select an output data level for the received signal. Closest prior art, Barton teaches all subject matter recited above. However, Barton does not teach the further limitation of generating an error signal by the comparator to control the adaptive model of the transmission channel. Barton further does not teach adaptive equalizers receiving an ideal data level corresponding to one of the data levels in generating an input signal for channel estimators. Therefore, prior art does not teach or suggest the further limitations claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Jay Patel**, can be reached at **(703) 308-7728**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
P.O. Box 1450  
Alexandria, VA 22313-1450

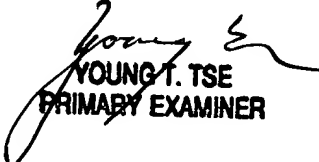
**or faxed to:**

**(703) 872-9306**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn  
8/7/04

  
**YOUNG T. TSE**  
**PRIMARY EXAMINER**